# EX-91050 Display Monitor
# User Manual

This equipment generates, uses and can radiate radio frequency energy and if not installed and Used in accordance with the instructions manual may cause interference to radio communications.
It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interence when Operated in a commercial environment. Operation of this equipment in a residential area is likely To cause interference in which case the user at his own expense will be required to take whatever Measures may be required to correct the interference

Electric Shock Hazard – Do not operate the workstation with its back cover removed. There are dangerous high voltages inside.

## Disclaimer

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# Table of Contents

**Warning!……2**
**Disclaimer……2**

## Chapter 1 Getting Started

1.1 Features……5
1.2 Specifications……5
1.3 Dimensions……7
1.4 Brief Description……8
1.5 Display Mode……9

## Chapter 2 OSD

2.1 Front Panel Controls……10
2.2 OSD Controls……10
2.3 Main Menu……11
2.4 AD Board (TB-6020) OSD Functions……13

## Chapter 3 Touch Screen Installation

3.1 Introduction to PenMount Control Board……14
3.2 Features……15

## Chapter 4 Touch Driver Installation

4.1 Windows 2000/XP Driver Installation……16
4.2 Configuring PenMount Windows 2000/XP Driver……20
4.3 Uninstall PenMount Windows 2000/XP Driver……26
4.4 Software Function Descriptions……27

## Figures

Figure 1.1: Dimensions of EX-91050T……7

Figure 1.2: Front View…..…….……..……8
Figure 1.3: Rear View……..…..……...8
Figure 1.4: Connector……..……..……...9
Figure 3.1: Bird Eye's View of Control Board……14
Figure 3.2: Mechanical Drawing of Control Board……14
Figure A: Panelmounting……30
Figure B: VESAmounting……...30

# Appendix

Panelmounting…..……30
VESAmounting…..……..……30

# Chapter 1

## 1.1 Features

- 5.7” VGA color active TFT LCD display
- NEMA 4/12 IP65-certified front panel
- OSD Control on rear side
- Sealed resistive touch screen
- Support panel mount and VESA75 mounting
- Optional DC 11~28V wide range power input

## 1.2 Specifications

### Display

- Display: 5.7” VGA color TFT LCD display
- Maximum resolution: 640 x 480
- Maximum colors: 262,144 colors (6bit for R,G,B)
- Luminance: 220 cd/m²
- Viewing angle: 140˚(H), 100˚(V)
- Backlight life: 45,000 hours
- OSD controls/indicators: automatic screen, setup (OSD), brightness, contrast, horizontal/vertical position, image lock, color balance, video information, power on and sync detection
- Touch screen: resistive antiglare
- Power Supply: 12V DC

### Mechanical

- Construction: plastic housing and sealed touch screen
- NEMA 4/12 IP65-certified front panel
- Mounting: panel mount/VESA 75 mount
- Dimensions: 204(W) x 149(H) x 59mm (D)
- Gross Weight:

## Environmental

●Operating temperature: 0 to 50℃ (32 to 122℉)
● Storage temperature: -20 to 60℃ (-4 to 140℉)
● Relative humidity: 10 to 90% @40℃, non-condensing without touch screen
● Vibration: 1G peak, 5~500Hz (at random)
● Shock: 15G peak acceleration (11 msec.duration)
● Ratings: NEMA 4/IP65
● EMC: CE, FCC Class A

## Ordering Information

EX-91050T 5.7” industrial display monitor with sealed touch screen (plastic bezel)

# 1.3 Dimensions

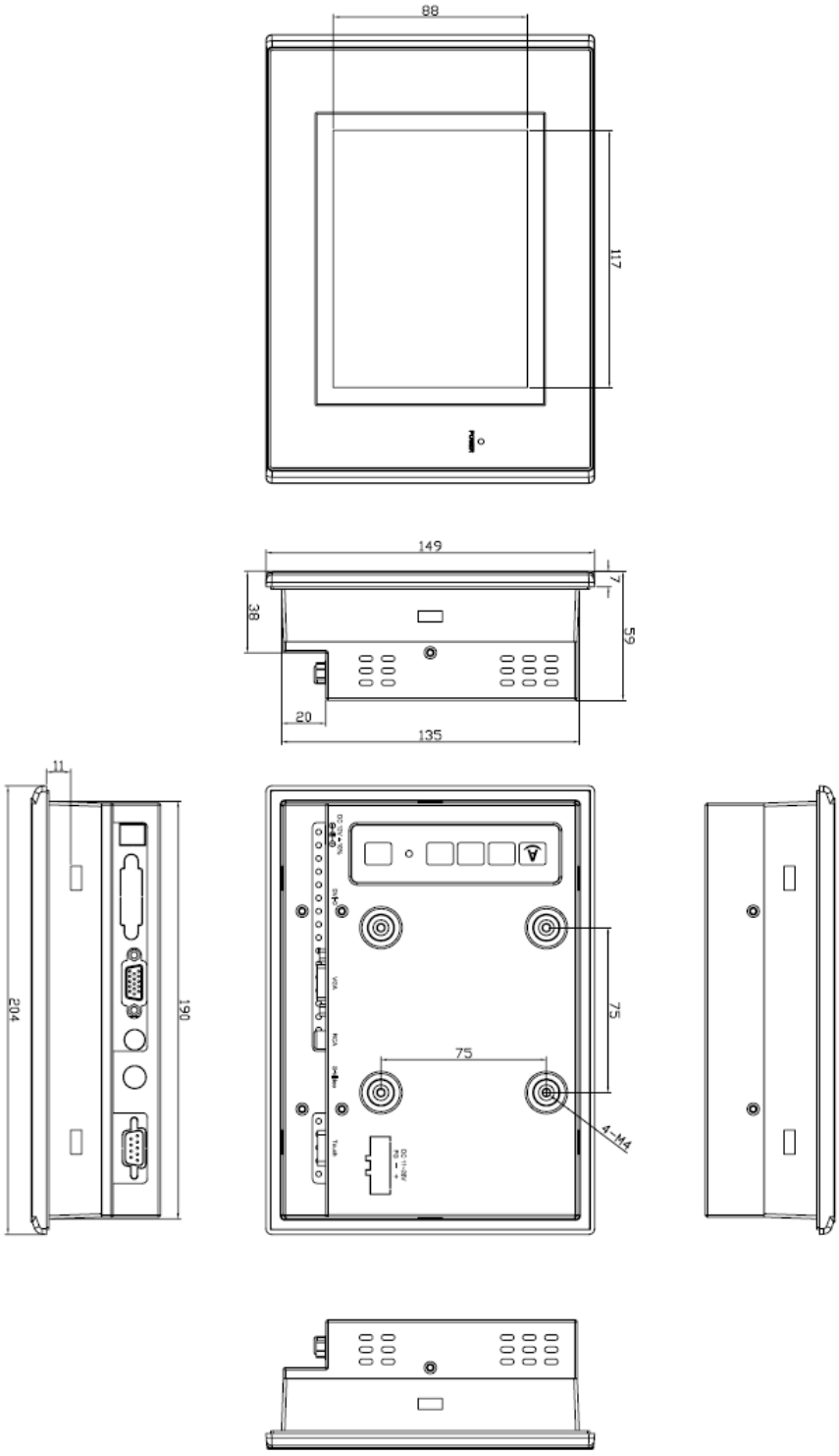



**Figure 1.1: Dimensions of the EX-91050**

# 1.4 Brief Description of the EX-91050

The EX-91050 is a 5.7-inch color active TFT flat panel display, which takes up a small area to operate but brings performance to a new height, resulting in an effective work response. Given its ruggedness, the unit features an excellent viewing ability for monitoring and control applications. It is available with resistive touch screen that is easy to use and maintain.

The front panel of the display monitor is sealed with gasket for NEMA 4/IP 65 rating when it is panel-mounted in a NEMA rated cabinet or enclosure. VESA 75 is another mounting option.

**Figure 1.2: Front View of the EX-91050**

**Figure 1.3: Rear View of the EX-91050**

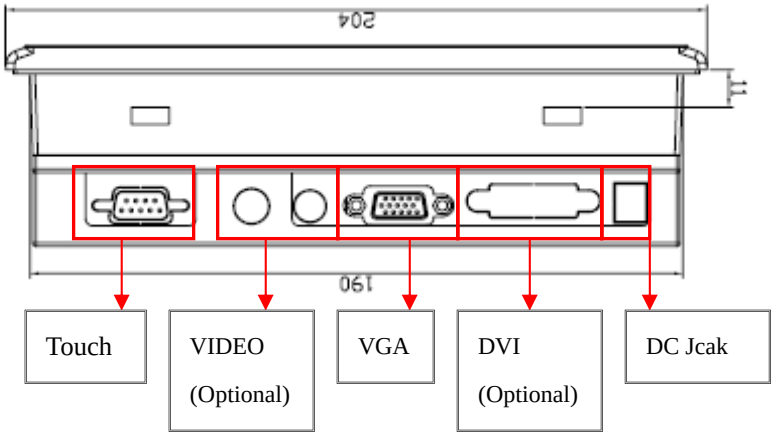



**Figure 1.4: Connector of the EX-91050**

## 1.5 Display Mode

| Display Mode | | Hori. Sync (KHz) | Vert. Sync. (Hz) |
|---|---|---|---|
| VGA 640 x 480 | | 31 | 60 |
| | | 38 | 72 |
| | | 38 | 75 |
| SVGA 800 x 600 | | 35 | 56 |
| | | 38 | 60 |
| | | 48 | 72 |
| | | 47 | 75 |
| XGA 1024 x 768 | | 48 | 60 |
| | | 56 | 70 |
| | | 60 | 75 |
| SXGA | 1152 x 864 | 68 | 75 |
| | 1280 x 1024 | 64 | 60 |
| | | 80 | 75 |

# Chapter 2

## 2.1 Front Panel Controls

Power switch: To turn ON or OFF the power

Shift the icon to the right side or shift it up

Shift the icon to the left side or shift it down

Menu: To enter OSD menu for related icon and item.

Auto Button: One-touch auto adjustment

## 2.2 OSD Controls

To make any adjustment, select the following:

1. Press (Menu) to show the OSD menu or disable the OSD menu.
2. Select the icon that you wish to adjust with the ( / or +/-) key in the menu.
3. Press (Menu) and then choose the item with the ( / or +/-) key.
4. Press (Menu) and then adjust the quality with the ( / or +/-) key.

## 2.3 Main Menu

In the **Main** menu, there are the following items:

- Color
- Image Setting
- Position
- OSD Menu
- Language
- Misc
- Exit

For **Color**, check out the following:

- Contrast
- Brightness
- Color Adjust
- Color Temp
- Back

For **Image setting**, check out the following:

- Clock
- Phase
- Gamma
- Sharpness
- Back

In the **Position**, there are the following:

- H. Position
- V. Position
- Back

In the **OSD** menu, there are:

- OSD H. Pos.
- OSD V. Pos.
- OSD Timer
- Back

In the **Language** menu, there are:

- English
- Frances
- Germany
- Spanish
- Traditional Chinese
- Simplified Chinese
- Japanese

In the **Misc** menu, there are:

- Signal Source
  Select VGA: Analogue VGA Input
  Select DVI: Digital DVI-D Input
  Select AV: Composite Video Input
  Select SV: S-Video Video Input
- Reset
- Back

# 2.4 AD Board (TB-6020) OSD Functions

### 1.) Getting into Burn-in Mode

Before setting into a burn-in mode, first disconnect the AC power cord. Then press (don't let them go) the ➤ ➘ buttons until the AC power cord is connected and the "RGB" appears on the top left corner of your screen. Now it can be put into the burn-in mode for changing colors.

### 2.) Getting Out of Burn-in Mode

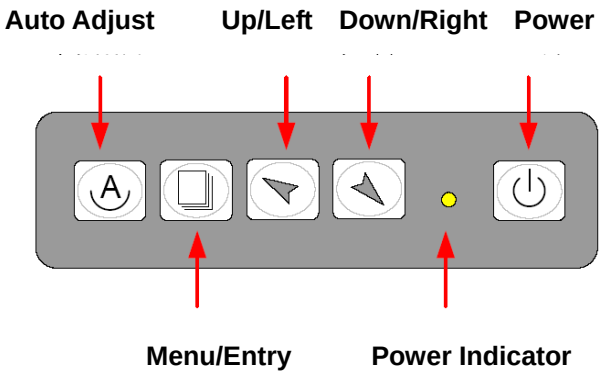
Before getting out of the burn-in mode, please first disconnect the AC power cord. Then press the ➤ button (If not workable, press the ➘ button and don't let them go) until the AC power cord is connected. Please don't let your fingers go until the AC power cord is connected again and the wording of "RGB" appears on the top left corner of your screen, and wait for 3 second. Under the non-signal entry situation, if **Cable Not Connected** is seen, exit is thus successfully made.

**When the Burn-in Mode is Unable to Eradicate…**

1.) If the "RGB" is still on the top left corner of the screen, press ⧉ to enter "Miscellaneous" and choose "Reset", and then **Yes,** and press ⧉. When the screen goes black, disconnect power and repeat the above steps.

2.) If the "RGB" is not found, disconnect the AC power cord first. Then press the Ⓐ ➘ buttons (don't let them go) until the AC power cord is connected, and wait for 2 to 3 seconds. When "RGB" appears, repeat the above steps.

3.) Functions of OSD Keys



# Chapter 3

## 3.1 Introduction to the PenMount 9036 Controller Board

The PenMount 9036 control board is configured for use with the RS-232 interface. It connects to the touch screen, power supply and computer system's RS-232 port, and supports 4-, 5- and 8-wire touch screens. The control board has some advanced functions, such as PnP and non-PnP mode adjustable baud rate, thus making easy for customers to select different touch screens without changing the control board. The size of the board is 25 by 60mm, and it has two connectors and one dipswitch on-board.

**Figure 3.1: Bird's Eye View of PenMount 9036**

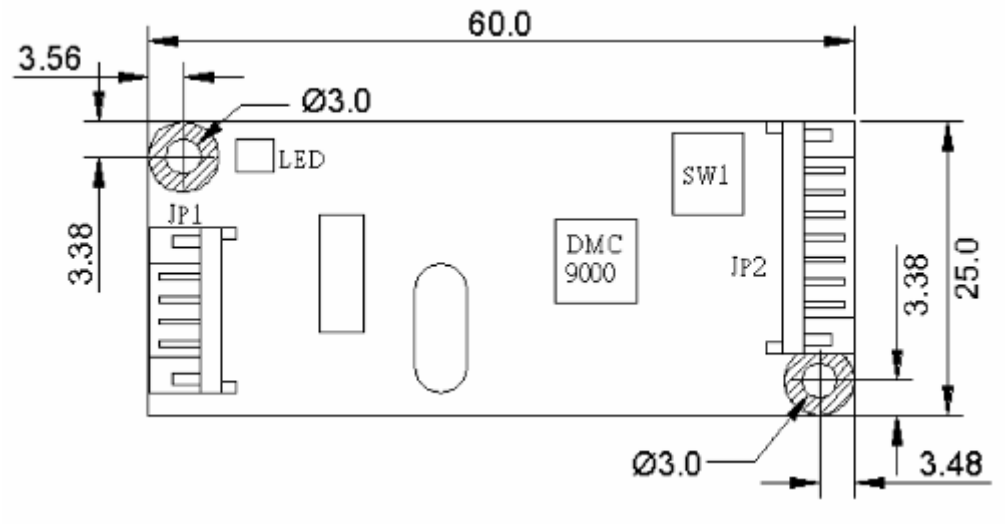



**Figure 3.2: Mechanical Drawing of PenMount 9036**

## 3.2 Features

- RS-232 interface
- Touch controller is DMC9000
- Design for the best touch performance and easy configuration
- PnP or Non-PnP mode selectable
- Design for best cost arrangement
- Supporting 2048x2048 pen device resolution

# Chapter 4

## 4.1 Windows 2000/XP Driver Installation for 9036 Control Board

Before installing the Windows 2000/XP driver software, you must have the Windows 2000/XP system installed and running on your computer. You must also have the 9036 PenMount Serial Interface controller board installed. Contents of the PenMount Windows 2000/XP driver folder are listed below:

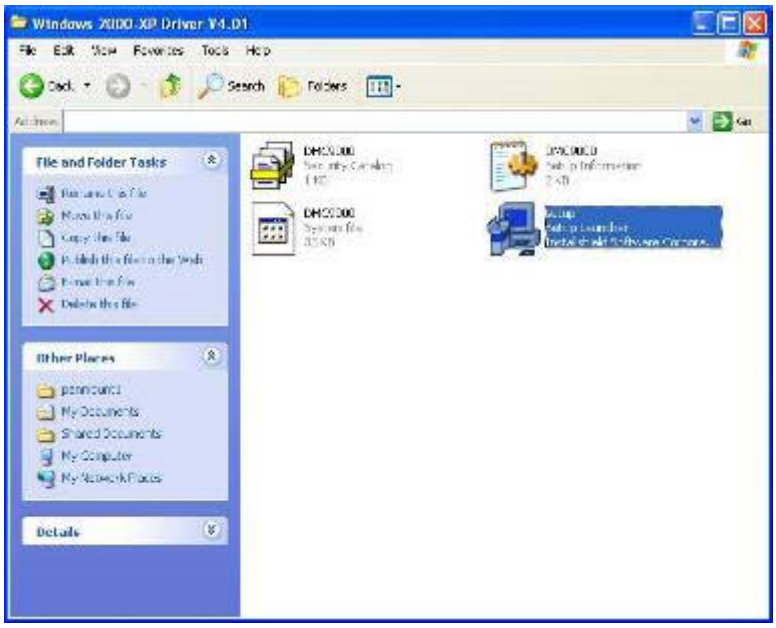
**DMC9000.inf**
**DMC9000.sys**
**DMC9000.cat**
**SETUP.EXE**

If you have an older version of the PenMount Windows 2000/XP driver installed in your system, please remove it first. Follow the steps below to install the PenMount Windows 2000/XP driver.

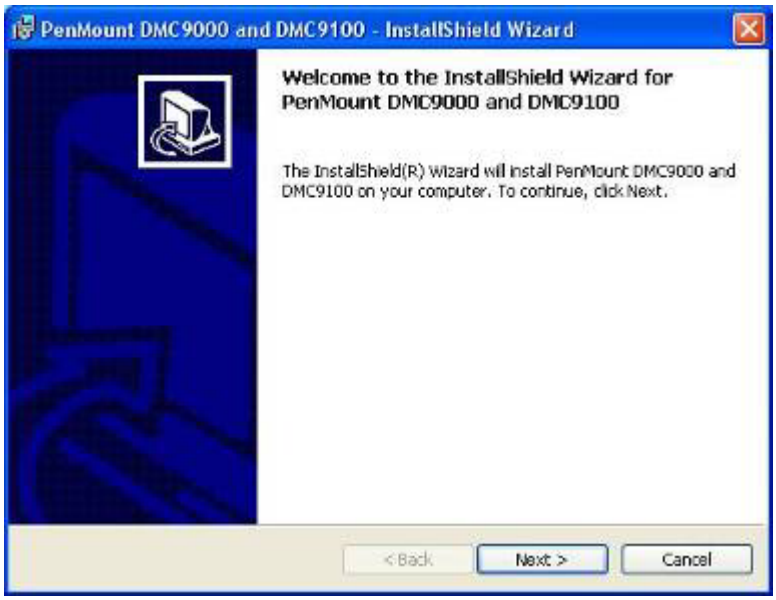
1. When the system first detects the controller board, a screen appears that shows “Unknown Device”. Do not use this hardware wizard. Press Cancel.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Unknown
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

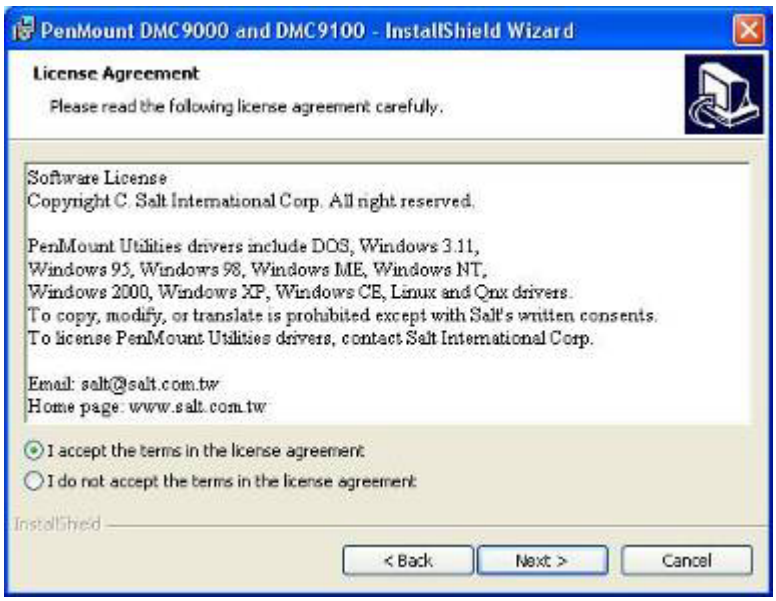
2. Insert the PenMount Driver CD-ROM. Go to the Windows 2000-XP Driver folder. Click **setup.exe**.



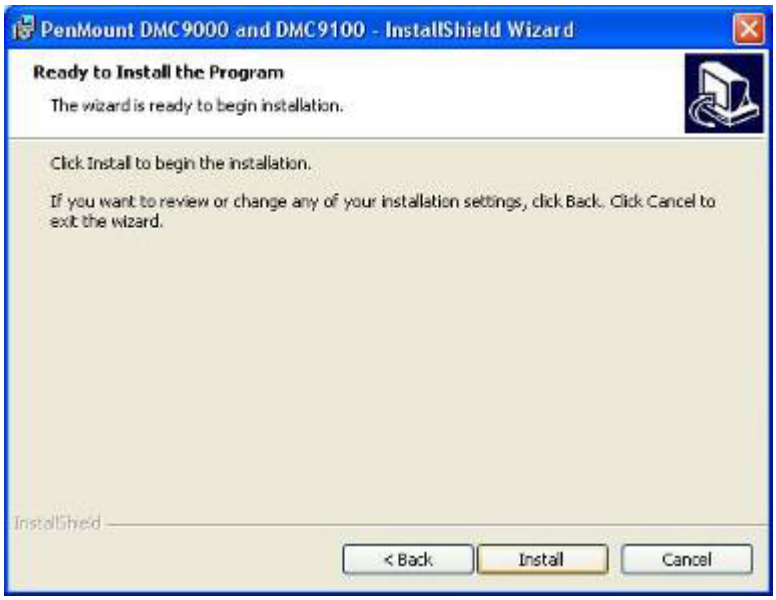

3. The screen displays the installation wizard for the PenMount software. Click “Next”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
Welcome to the InstallShield Wizard for PenMount DMC9000 and DMC9100
The InstallShield(R) Wizard will install PenMount DMC9000 and DMC9100 on your computer. To continue, click Next.
< Back
Next >
Cancel

3. A License Agreement appears. Click “I accept…” and “Next”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Software License
Copyright C Salt International Corp. All right reserved.
PenMount Utilities drivers include DOS, Windows 3.11,
Windows 95, Windows 98, Windows ME, Windows NT,
Windows 2000, Windows XP, Windows CE, Linux and Qnx drivers.
To copy, modify, or translate is prohibited except with Salt's written consents.
To license PenMount Utilities drivers, contact Salt International Corp.
Email: salt@salt.com.tw
Home page: www.salt.com.tw
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

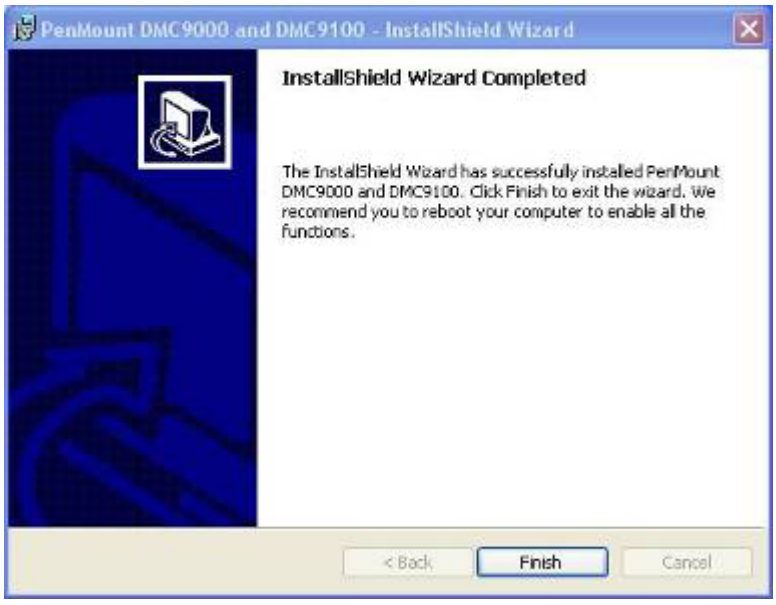
4. The “Ready to Install the Program” screen appears. Select “Install”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. The next screen is “Hardware Installation”. Select “Continue Anyway”.

Hardware Installation
The software you are installing for this hardware:
PenMount DMC9000 and DMC9100
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

6. The “InstallShield Wizard Completed” appears. Click “Finish”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed PenMount DMC9000 and DMC9100. Click Finish to exit the wizard. We recommend you to reboot your computer to enable all the functions.
< Back
Finish
Cancel

# 4.2 Configuring the PenMount Windows 2000/XP Driver

Upon rebooting, the computer automatically finds the new 9036 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, click “Calibrate”.

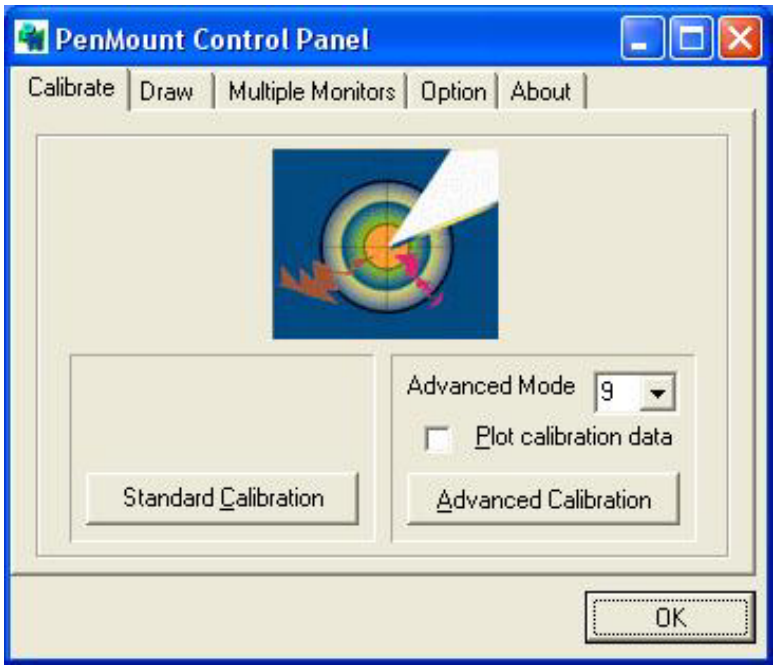
## PenMount Control Panel

The functions of the PenMount Control Panel are **Calibrate**, **Draw**, **Multiple Monitors**, **Option**, and **About**, which are explained in the following sections.

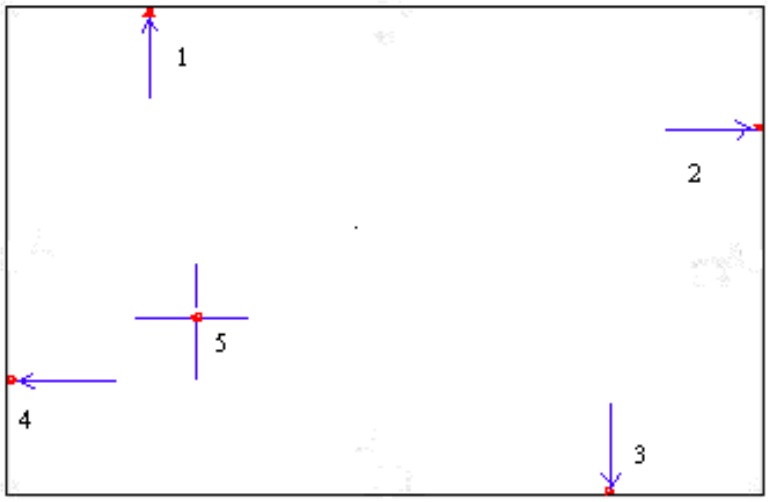
## Calibrate

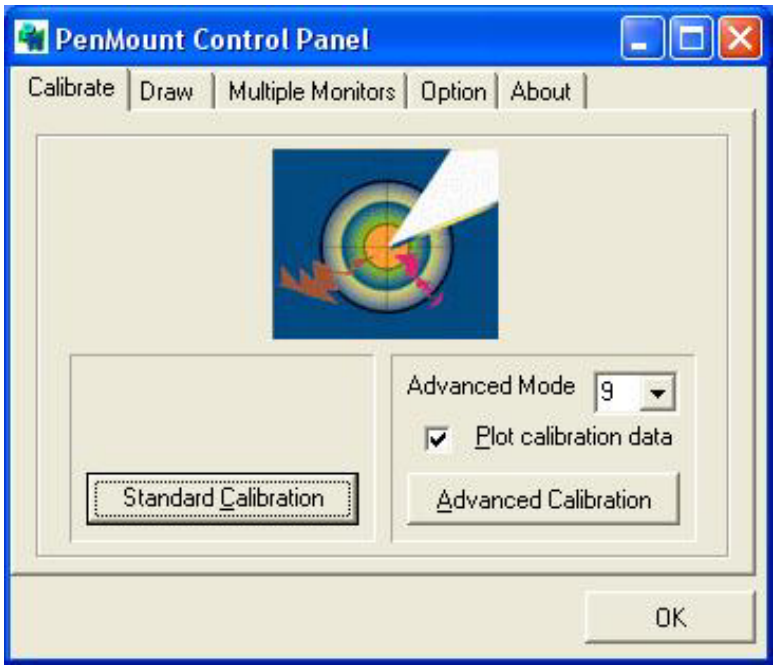
This function offers two ways to calibrate your touch screen. “Standard Calibration” adjusts most touch screens. “Advanced Calibration” adjusts aging touch screens.

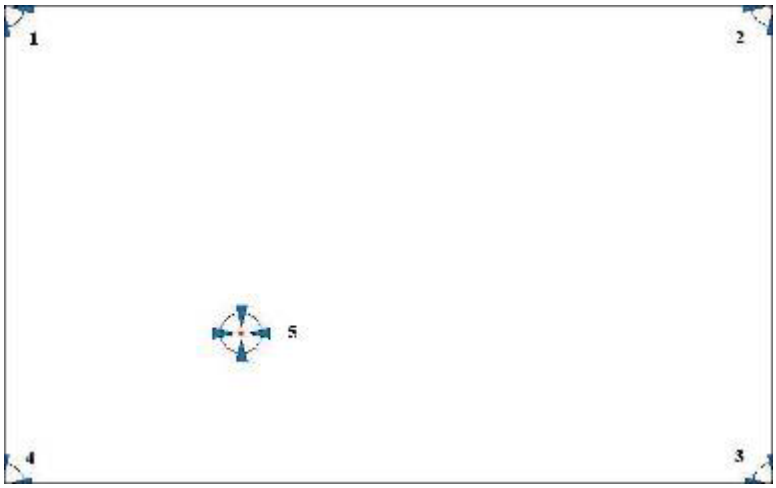
| | |
|---|---|
| Standard Calibration | **Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’.** |
| Advanced Calibration | **Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ‘ESC’.** |



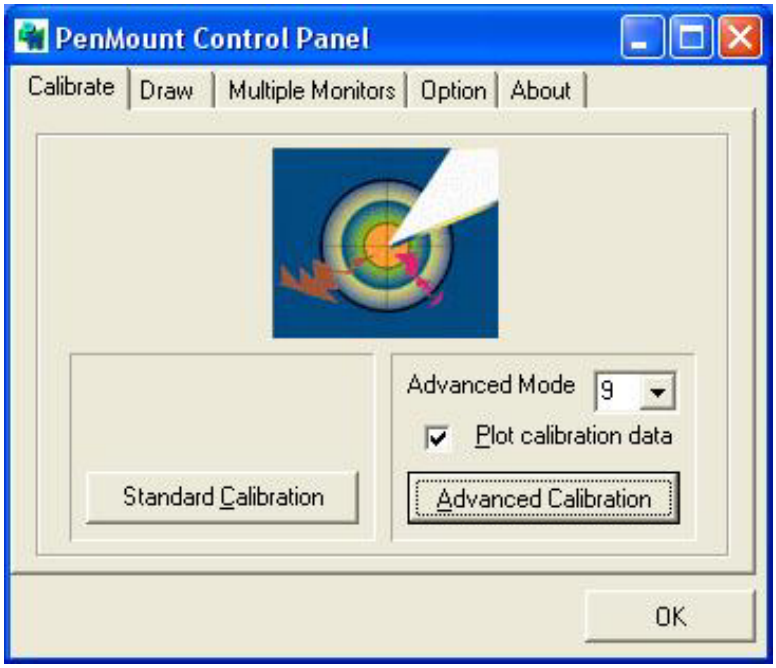
**NOTE:** The older the touch screen is, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy.



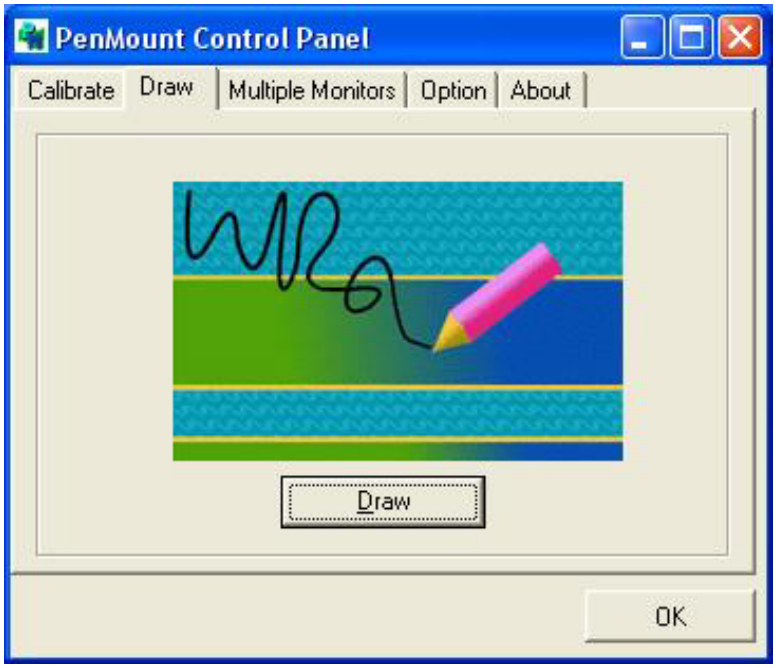



Plot Calibration Data **Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.**

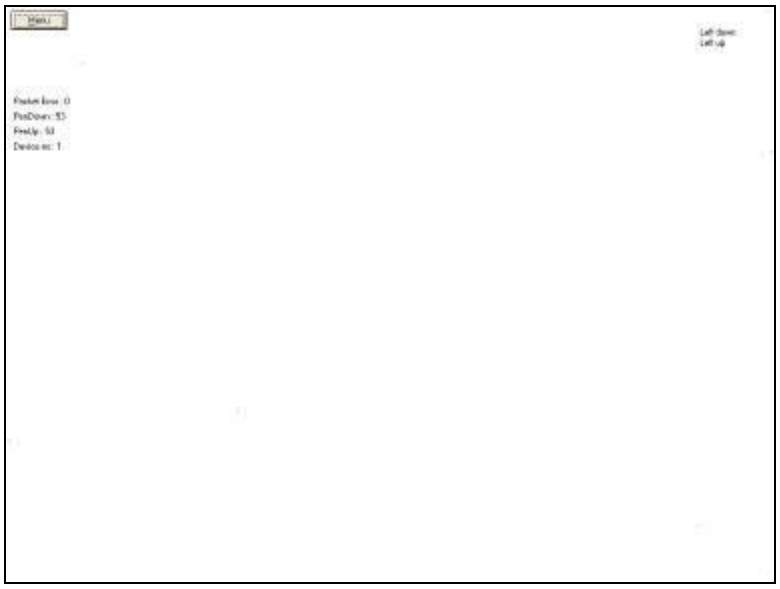


## Draw

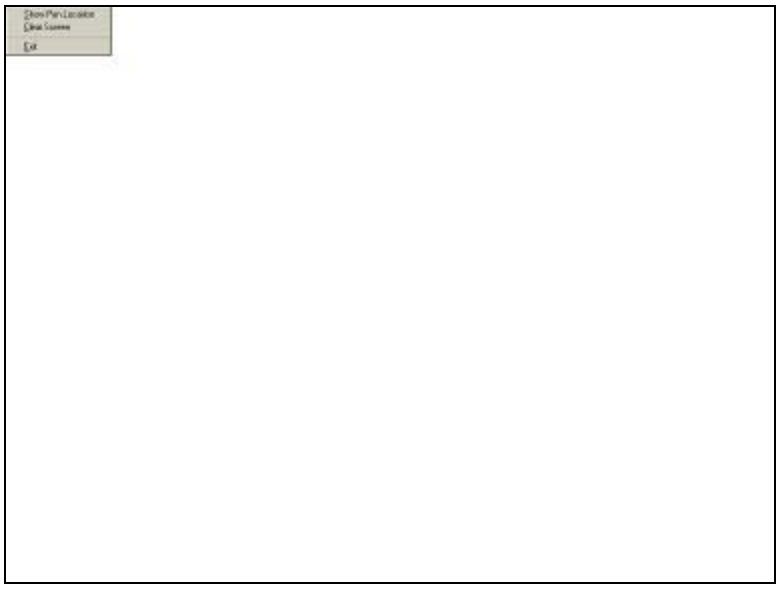
Tests or demonstrates the PenMount touch screen operation. The display shows touch location. Click **Draw** to start. Touch the screen with your finger or a stylus and the drawing screen will register touch activity such as **left**, **right**, **up**, **down**, **pen up**, and **pen down**.




Touch the screen with your finger or a stylus and the drawing screen will register touch activity such as **left**, **right**, **up**, **down**, **pen up**, and **pen down**.

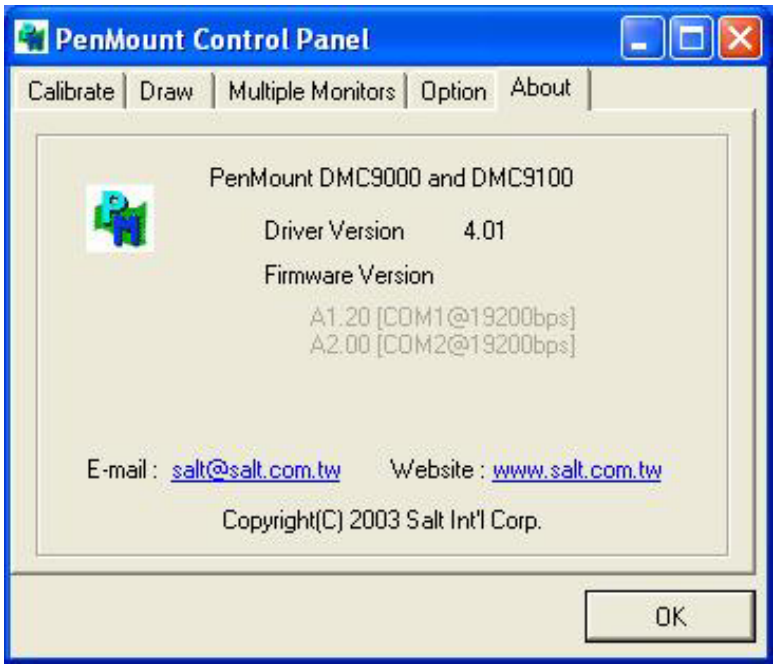


Click Clear Screen to clear the drawing.



## About

This panel displays information about the PenMount controller and this driver version.




## PenMount Monitor Menu Icon

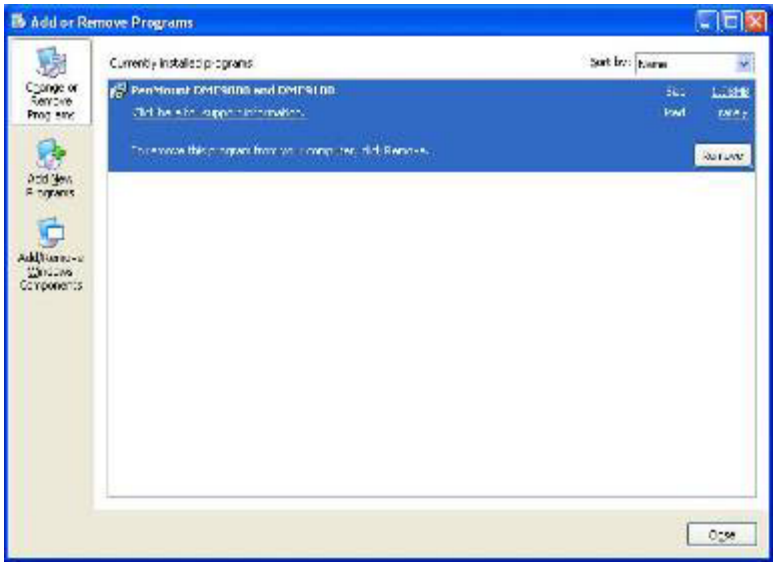
The PenMount monitor icon (PM) appears in the menu bar of Windows 2000/XP system when you turn on the PenMount Monitor in the PenMount Utilities.

The PenMount Monitor has the following functions:

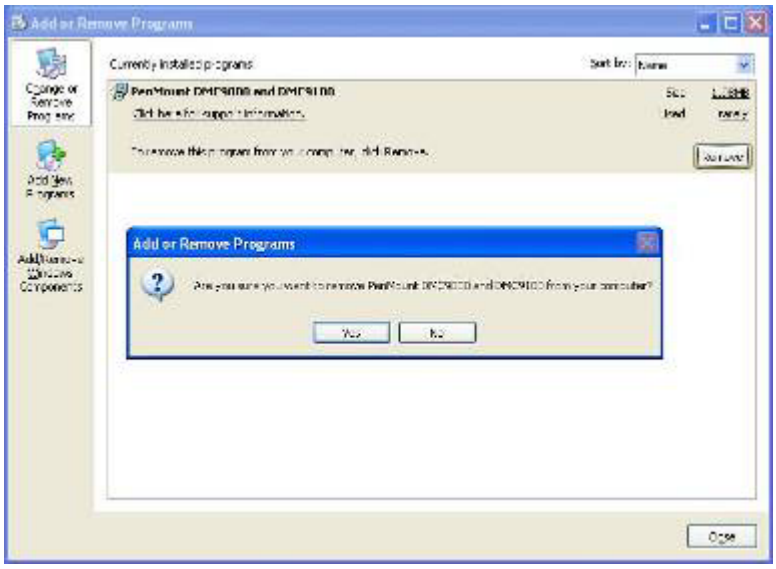
| | |
|---|---|
| Beep | **Turns beep on or off.** |
| Right Button | **When you select this function, a mouse icon appears in the right-bottom of the screen. Click this icon to switch between Right and Left** **Button functions.** |
| Pen Stabilizer | **Check this function to reduce cursor vibration for relatively unstable touch screens, or where there may be excess vibration. Normally this function is not checked.** |
| Exit | **Exits the PenMount Monitor function.** |

## 4.3 Uninstall the PenMount Windows 2000/XP Driver

1. Exit the PenMount monitor (PM) in the menu bar.
2. Go to **Settings**, then **Control Panel**, and then click **Add/Remove program**. Select **PenMount DMC9000** and click the **Add/Remove** button.




3. Select **PenMount DMC9000 and DMC9100**. Click the **Remove** button.




4. Select “Yes” and “Close” to remove the PenMount Windows 2000/XP driver, and reboot the system.

# 4.4 Software Function Description

Description for each of the software functions shown in the table above follows:

## Standard Calibration

The Standard Calibration function lets you match the touch screen to your display so that the point you touch is accurately tracked on screen. Standard calibration only requires four points for calibration and one point for confirmation. Under normal circumstances, Standard Calibration is all you need to perform an accurate calibration.

## Advanced Calibration

The Advanced Calibration function improves the accuracy of calibration by using more involved engineering calculations. Use this function only if you have tried the Standard Calibration and there is still a discrepancy in the way the touch screen maps to the display. You can choose 4, 9, 16 or 25 points to calibrate, though we suggest that you first try 9 points, if it is still not tracking well then try 16 or 25 points. The more points you use for calibration, the greater the accuracy. Errors in calibration may occur due to viewing angle, or individual skill, and there may be little difference in using 16 or 25 points. Note that a stylus is recommended for the most accurate results.

## Stream/Point Mode

Stream and point modes control the touch and drag function of the touch screen. The point mode only allows “touch” interaction with the screen and does not allow the user to drag objects. The point mode is useful for maintaining the location of screen icons such on POS terminals. The stream mode allows a user to touch and drag icons and other items around on the screen, similar to using a mouse.

## Drawing Mode

Drawing mode is a utility that lets the user draw on the screen using a finger or stylus. This allows the user to test the touch screen and touch controller to see if it is operational or is mapped correctly. The drawing mode can display either the matrix address of points touched or just show lines drawn. One of the PenMount driver’s strengths is a special mathematical algorithm that minimizes the occurrence of noise and smooths the drawing of lines.

## Beep Sound

All of PenMount’s drivers support the beep sound function; however, some PC systems may only offer a fixed buzzer sound.

## Beep Sound Adjustable

Software drivers for Windows systems let the user adjust the frequency and length of the beep sound. The drivers let the user adjust the desired touch screen sound, as well as turn the sound off.

## Wake Up Function

The Wake Up function lets the user touch the screen and wake the system up from ‘suspend’ mode.

## Point Calibration Data

The Plot Calibration Data function displays the touch screen linearity map, which is available if the PenMount driver provides an Advance Calibration function when touch screens age their touch linearity declines. This non-linearity is apparent when the touched point on the touch screen is not the same as the point on the display. The plot calibration data function shows the linearity status of the touch screen. This is only a support function for the user. The exact linearity of a touch screen requires a linearity test machine.

## Right Button

The Right Button function simulates the right button function of a mouse. Click the right button and the user can only touch the screen once and the driver changes the touch definition to the left button.

## Hide Cursor

The Hide Cursor function keeps the cursor arrow and other cursor symbols from appearing when using the touch screen. The cursor appears when the user turns this function off.

## Cursor Offset

The Cursor Offset function lets the user adjust the position of the touch point to a desired location away from the real touch point.

## Double-Click Area and Speed

The Double-Click Area and Speed function lets the user adjust the double-click area and

speed to their personal preference.

## About

This option shows the exact version of the drivers and controller firmware. Updated drivers are available for download on the PenMount website.

# Appendix

## Panel Mounting

The EX-91050 display monitor is designed to be panel-mounted as shown in Figure A. Just carefully place the unit through the hole and tighten the given 8 screws from the rear to secure the mounting.

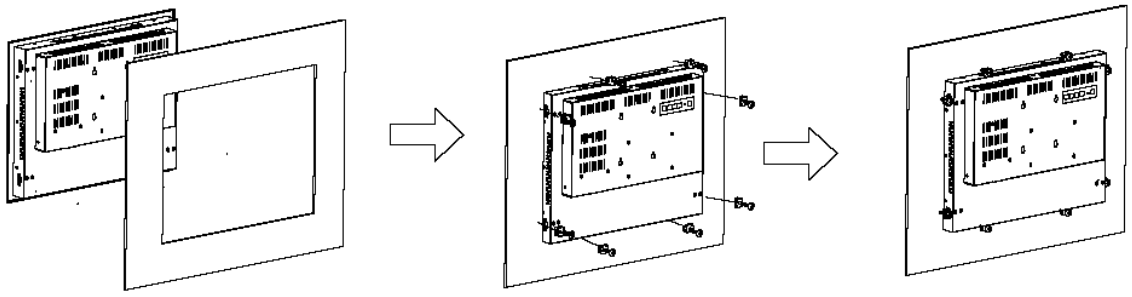


**Figure A: Panelmounting of the EX-91050**

## VESA 75 Mounting (optional)

The EX-91050 display monitor can be VESA-mounted as an option. Just carefully mount the arm onto the rear of the unit by fastening the given four screws as shown in Figure B.

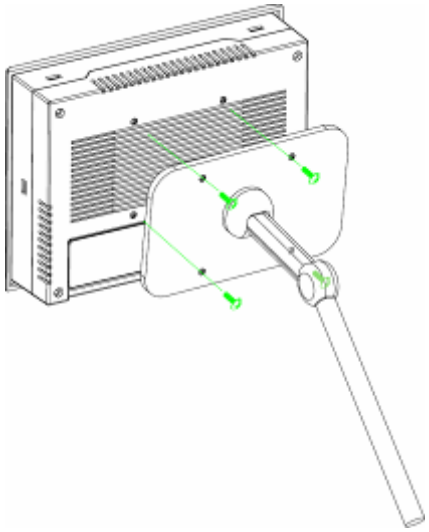


**Figure B: VESA-mounting of the EX-91050**